

Serial No.: 10/825,361

Docket No.: MRE-0045.01

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PATENT

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF APPEALS AND INTERFERENCE**

In re Application of

Confirmation No.: 8094

Ji Hyun HWANG et al.

Group Art Unit: 3651

Serial No.: 10/825,361

Examiner: Timothy R. Waggoner

Filed: April 16, 2004

Customer No.: 34610

For: FEEDER FOR SURFACE MOUNTING DEVICE

APPEAL BRIEF

U.S. Patent and Trademark Office
Customer Window, Mail Stop Appeal Brief-Patents
Randolph Building
401 Dulany Street
Alexandria, Virginia 223134

Sir:

This appeal is taken from the rejection of claims 15-17 and 32 as set forth in the Final Office Action dated May 15, 2007 (hereinafter the "Final Office Action"). In accordance with 37 C.F.R. §41.37, Applicants address the following items.

REAL PARTY IN INTEREST

The real party in interest is the assignee, Mirae Corporation. The assignment document is recorded at Reel 012318 and Frame 0853.

RELATED APPEALS AND INTERFERENCES

There are no related appeals and interferences.

STATUS OF THE CLAIMS

This is an appeal from the final rejection set forth in the Final Office Action dated May 15, 2007 of claims 15-17 and 32. Pending claims 15-17 and 32 are rejected. Pending claims 18-31 have been indicated as containing allowable subject matter.

STATUS OF AMENDMENTS

All Amendments filed in this application have been entered. A copy of all of pending claims 15-32 appears in the attached Claims Appendix.

SUMMARY OF THE CLAIMED SUBJECT MATTER

As stated in 37 C.F.R. §41.37(c)(v), Applicants are providing the following explanation of each of the independent claims (independent claim 15) involved in this appeal. This explanation refers to the specification and drawings. The following is merely an example summary and is not intended to be a discussion of the full and entire scope of the claims. Other interpretations, configurations and embodiments are also within the scope of the pending claims.

Independent Claim 15

Independent claim 15 is directed to a feeder for a surface mounting device. Independent claim 15 recites a feeder for a surface mounting device, comprising a feeding unit installed on a main frame, the feeding unit comprising a forward and backward rotational force generating device comprising a plurality of armature coils and a magnet unit positioned adjacent the plurality of armature coils, wherein the feeding unit is configured to carry a tape at a predetermined pitch interval; a vinyl separation unit installed on the main frame and configured to recover vinyl removed from the tape by rotation in a first direction or to discharge the vinyl therefrom by rotation in a second direction; and a vinyl recovery unit installed on the main frame. Referring, for example, to the exemplary embodiment shown in Figures 4-6 of the present application and discussed at pages 11+, a feeder for a surface mounting device includes a feeding unit 160, a vinyl separation unit 120, and a vinyl recovery unit 130. The feeding unit 110 is installed on main frame 100 and includes a forward and backward rotational force generating device comprising a plurality of armature coils 113 and a magnet unit 117 positioned adjacent the plurality of armature coils 113. The feeding unit 110 is configured to carry a tape TF a predetermined pitch interval. The vinyl separation unit 120 is also installed on the main frame 100 and is configured to recover vinyl V removed from the tape TF by rotation in a first direction or to discharge the vinyl V therefrom by rotation in a second direction. The vinyl recovery unit 130 is also installed in the main frame 100.

GROUND OF REJECTION TO BE REVIEWED ON APPEAL

The Final Office Action rejected claims 15-17 and 32 under 35 U.S.C. §103(a) as being unpatentable over Hawkswell, U.S. Patent No. 4,687,152, in view of Briehl, U.S. Patent No. 5,941,674, or Umetsu et al (hereinafter "Umetsu"), U.S. Patent No. 5,289,625.

ARGUMENT

Independent Claim 15

Independent claim 15 recites, *inter alia*, a feeding unit installed on a main frame, the feeding unit comprising a forward and backward rotational force generating device comprising a plurality of armature coils and a magnetic unit positioned adjacent the plurality of armature coils. The Final Office Action stated that Hawkswell discloses:

(Re claim 15) "a feeding unit installed on a mainframe, the feeding unit comprising" (52 figure 2). "a tape at a predetermined pitch interval (38 figure 2)." "a vinyl separation unit" (68 figure 2). "a vinyl recovery unit" (70 figure 2).

However, the Examiner acknowledges that "Hawkswell does not disclose that the feeding unit is capable of moving forward and backwards driven by a force generating device comprising a plurality of armature coils and a magnetic unit." The Examiner then argues that "Briehl and Umetsu both teach a feeding unit capable of moving forward and backwards driven by a force generating device comprising a plurality of armature coils and a magnet unit." The Examiner then concludes that "[i]t would be obvious to one skilled in the art to modify Hawkswell to make

the feeding unit capable of moving forward and backwards and driven by a force generating device comprising a plurality of armature coils and a magnet unit because it uses fewer moving parts making the device simpler and more robust.”

However, Hawkswell and Briehl or Umetsu, taken alone or in combination, fail to disclose or suggest all of the features of independent claim 15. That is, there is no disclosure or suggestion in Briehl of “a feeding unit capable of moving forward and backwards,” as asserted by the Examiner. Moreover, independent claim 15 recites, *inter alia*, a “feeding unit comprising a forward and backward rotational force generating device,” not merely a “feeding unit capable of moving forward and backwards.”

Additionally, there is no disclosure or suggestion in either Briehl or Umetsu of a “feeding unit comprising a forward and backward rotational force generating device comprising a plurality of armature coils,” as recited in independent claim 15. Moreover, neither Briehl nor Umetsu discloses or suggests “a force generating device comprising a plurality of armature coils and a magnet unit”, as asserted by the Examiner. Rather, Briehl discloses an indexing gear motor 52 (see col. 5, lines 35-50 of Briehl), while Umetsu discloses motors 13a, 14a, 15a, and a stepping motor 9 (see col. 5, lines 13-37 and lines 48-53 of Umetsu); however, none of these motors are disclosed as generating both forward and backward rotational force or comprising a plurality of armature coils and a magnet unit.

Furthermore, Hawkswell specifically teaches that the drive means is “so constructed and arranged as to cause the drive wheel 52 to rotate through a predetermined angle of revolution in

the operation of the machine to thereby feed the tape assembly 38, 40 a predetermined distance equal to the distance by which the pockets 42 (and thus the components in the pockets) are spaced apart on the carrying tape 38.” See col. 4, lines 27-37 of Hawkswell. Hawkswell further teaches that “[t]he drive means comprises a ratchet wheel (not visible in the drawings) mounted for rotation above the axis of the drive wheel whereby the drive wheel 52 is rotated when the ratchet wheel is rotated.” Additionally, Hawkswell teaches that “[a] spring member 56 is engageable with the ratchet wheel to prevent the ratchet reel rotating in a direction opposite to the feed direction.” See col. 4, lines 37-39 of Hawkswell. Thus, there would have been no motivation to modify Hawkswell in view of Briehl or Umetsu, as proposed by the Examiner, to produce the claimed features of independent claim 15, as such a modification teaches away from Hawkswell’s teachings and further would destroy Hawkswell’s drive means 52 for its intended purpose. Accordingly, it is clear that the Examiner’s proposed combination is improperly based on hindsight gleaned from Applicants’ own disclosure.

In the “Response to Arguments” section of the Office Action, the Examiner argues that:

Applicant argues that the combination of Hawkswell/Briehl/Umetsu does not anticipate a drive mechanism comprising a plurality of magnets and coils and the ability to move forwards and backwards and that Hawkswell teaches away from it. On the first point that the drive mechanism doesn’t comprise a plurality of magnets and coils, it is inherent in an electrical motor that a plurality of magnets and coils are needed to construct such a motor. As for the means Hawkswell teaches to prevent the unintentional reversing of the feed, the motors of Briehl and Umetsu both include means to prevent the unintentional reverse feed of the strip while allowing for adjustment if necessary.

However, the Examiner's statement that "it is inherent in an electrical motor that a plurality of magnets and coils are needed to construct such a motor" is incorrect. Many electrical motors do not include a plurality of magnets and coils such as, for example, ball bearing motors, brushed DC electric motors, inchworm motors, linear motors, lynch motors, mendocino motors, piezoelectric motors, repulsion motors, stepper motors, traction motors, ultrasonic motors, and unipolar motors, all of which are considered electric motors. Further, as set forth above, independent claim 15 recites, *inter alia*, a feeding unit comprising a forward and backward rotational force generating device, while Briehl and Umetsu, as acknowledged by the Examiner, merely teach "means to prevent the unintentional reverse feed of the strip while allowing for adjustment if necessary."

For at least the above reasons, it is respectfully submitted that the rejection of the independent claim 15 over Hawkswell and Briehl or Umetsu should be reversed.

Dependent Claim 16

Dependent claim 16 depends from independent claim 15 and recites that the vinyl separation unit utilizes rotational force generated by the feeding unit. Dependent claim 16 is allowable over Hawkswell and Briehl or Umetsu at least for the reasons discussed above with respect to independent claim 15, from which it depends, as well as for its added features.

Dependent Claim 17

Dependent claim 17 depends from independent claim 15 and recites that the vinyl recovery unit is connected to the vinyl separation unit by a belt and recovers the vinyl by winding the same using rotational force transferred to the vinyl separation unit by the belt in the first direction or discharges the vinyl using the rotational force transferred to the vinyl separation unit by the belt in the second direction. Dependent claim 17 is allowable over Hawkswell and Briehl or Umetsu at least for the reasons discussed above with respect to independent claim 15, from which it depends, as well as for its added features.

Dependent Claim 32

Dependent claim 32 depends from independent claim 15 and recites a surface mounting device comprising the feeder of claim 15. Dependent claim 32 is allowable over Hawkswell and Briehl or Umetsu at least for the reasons discussed above with respect to independent claim 15, from which it depends, as well as for their added features.

CLAIMS APPENDIX

The attached Claims Appendix contains a copy of the claims involved in the appeal.

EVIDENCE APPENDIX

Applicant has not provided any evidence with this appeal.

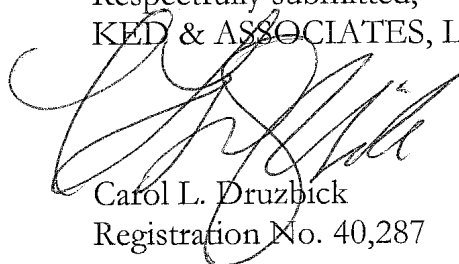
RELATED PROCEEDINGS APPENDIX

Applicant is not providing copies of related decisions.

CONCLUSION

It is respectfully submitted that the above arguments show that each of claims 15-17 and 32 are patentable over the applied references. Based at least on these reasons, it is respectfully submitted that each of claims 15-17 and 32 defines patentable subject matter. Applicant respectfully requests that the rejections of claims 15-17 and 32 set forth in the Final Office Action be reversed.

Respectfully submitted,
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CLAIMS APPENDIX

15. A feeder for a surface mounting device, comprising:

a feeding unit installed on a main frame, the feeding unit comprising a forward and backward rotational force generating device comprising a plurality of armature coils and a magnet unit positioned adjacent the plurality of armature coils, wherein the feeding unit is configured to carry a tape at a predetermined pitch interval;

a vinyl separation unit installed on the main frame and configured to recover vinyl removed from the tape by rotation in a first direction or to discharge the vinyl therefrom by rotation in a second direction; and

a vinyl recovery unit installed on the main frame.

16. The feeder of claim 15, wherein the vinyl separation unit utilizes rotational force generated by the feeding unit.

17. The feeder of claim 15, wherein the vinyl recover unit is connected to the vinyl separation unit by a belt and recovers the vinyl by winding the same using rotational force transferred to the vinyl separation unit by the belt in the first direction or discharges the vinyl using the rotational force transferred to the vinyl separation unit by the belt in the second direction.

18. The feeder of claim 15, wherein the magnet unit comprises a first disc member having a plurality of magnets arranged thereon.

19. The feeder of claim 18, wherein the plurality of magnets comprise a plurality of S and N polar permanent magnets.

20. The feeder of claim 18, wherein the plurality of armature coils are provided on a second disc member, and the second disc member is mounted on a drive shaft adjacent to the first disc member.

21. The feeder of claim 20, wherein a ball bearing is installed at a center portion of the second disc member.

22. The feeder of claim 20, further comprising:
a position sensing unit configured to sense a position of the magnet unit.

23. The feeder of claim 22, wherein the position sensing unit comprises a position sensing device and a position sensing disc positioned adjacent the position sensing device and mounted on the drive shaft.

24. The feeder of claim 23, wherein the position sensing device comprises a light receiving element and a light emitting element.

25. The feeder of claim 22, wherein the position sensing unit comprises a gear train in communication with a position detecting device.

26. The feeder of claim 25, wherein a first gear of the gear train is mounted on the drive shaft and a last gear of the gear train is mounted on a shaft of the position detecting device.

27. The feeder of claim 26, wherein the position detecting device comprises an encoder.

28. The feeder of claim 22, wherein the position sensing unit comprises a first gear mounted on the drive shaft, a second gear mounted on a shaft of a position detecting device, and a belt configured to transfer the backward and forward rotational force of the feeding unit from the first gear to the second gear.

29. The feeder of claim 28, wherein the position detecting unit comprises an encoder.

30. The feeder of claim 15, wherein the vinyl separation unit comprises:

a first separation unit gear in rotational communication with a feeding unit gear of the feeding unit so as to receive the forward and backward rotational force transferred thereto from the feeding unit;

a second separation unit gear in rotational communication with the first separation unit gear so as to receive the forward and backward rotational force transferred thereto from the feeding unit via the first separation unit gear; and

a vinyl discharge gear in rotational communication with the second separation unit gear and configured to rotate to carry the vinyl when it receives rotational force transferred from the second separation unit gear in a first direction, or to re-carry the vinyl when it receives rotational force from the second separation unit gear in a second direction.

31. The feeder of claim 30, wherein the vinyl recovery unit comprises:

a recovery unit gear in communication with the first separation unit gear by means of a belt so as to receive the backward and forward rotational force transferred thereto from the feeding unit via the first separation unit gear and belt; and

a recovery reel assembled at one side of the recovery unit gear, for thereby recovering the vinyl by winding it around the recovery reel or discharging the recovered vinyl to the vinyl separation unit according to the backward and forward rotational force received by the recovery unit gear.

32. A surface mounting device comprising the feeder of claim 15.

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EVIDENCE APPENDIX

None provided.

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RELATED PROCEEDINGS APPENDIX

None.